F·A·A·M facility for airborne atmospheric measurements

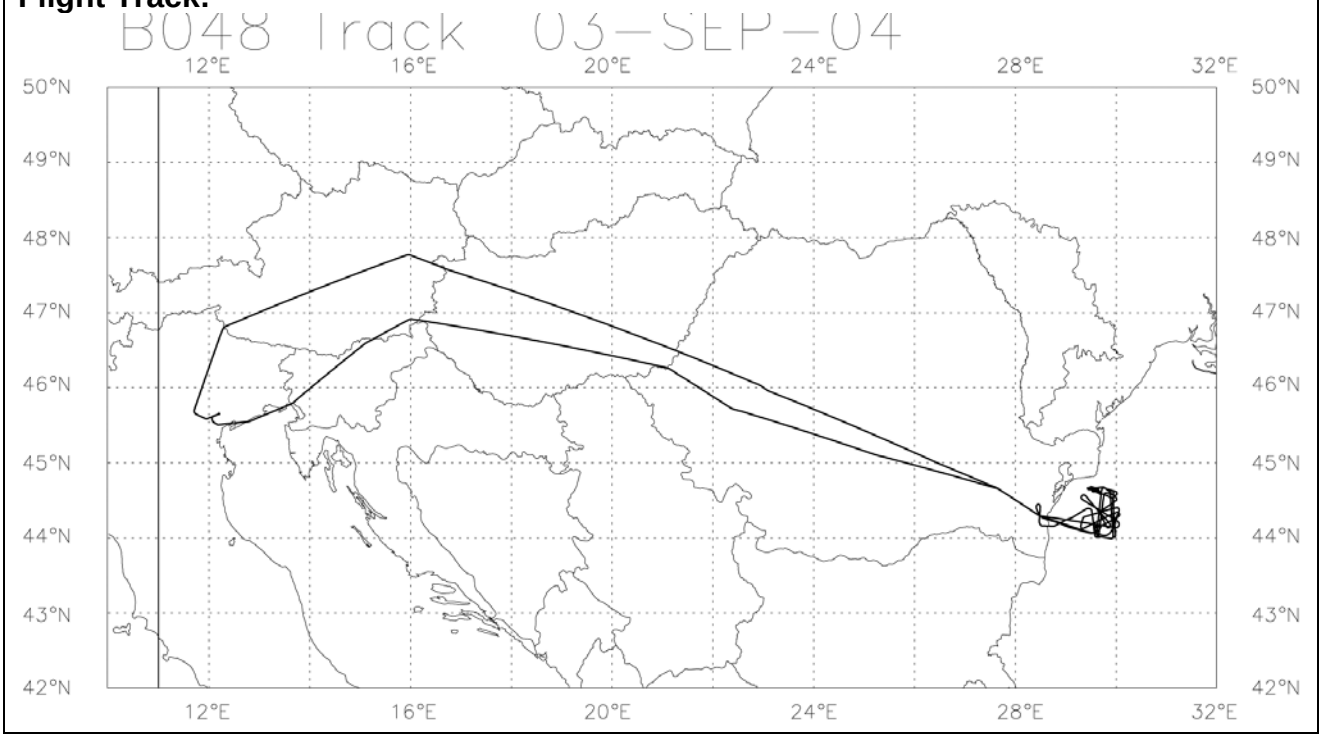
FLIGHT FOLDER

Flight No.:	B048	
Date:	03 Sep 2004	
Take Off	06:07:01	12:57:26
Landing:	10:58:57	16:40:10
Flight Time	4h51m56	3h42m44

Trials Instructions: ADRIEX – pollution from Western and Eastern Europe
Operating Area: N Italy to the Black Sea and back

POB	Position	Name	Institute
1	Captain	Alan Foster	Directflight
2	Co-pilot	Alan Roberts	Directflight
3	Co-pilot	Ian Ramsay-Rae	Directflight
4	Mission Scientist 1	Jim Haywood	Met Office
5	Flight Manager	Maureen Smith	FAAM
6	Dropsondes	Steve Devereau	FAAM
7	Core Chemistry	Doug Anderson	FAAM
8	CVI	Paul James	FAAM
9	VACC	Stuart Heath	FAAM
10	Bottle filling	Ken Dewey	FAAM
11	Cloud Physics	Martyn Pickering	Met Office
12	SWS	Andy Wilson	Met Office
13	Filters	Paola Formenti	CNRS/University of Paris 12
14	AMS	Jonny Crosier	UMIST
15	TDL / WAS / PAN / Tubes	Jim McQuaid	Leeds University
16	Nephelometer / PSAP	Jolene Cook	Reading University
17	Mission Scientist 2	Simon Osborne	Met Office
18	Mission Scientist 3	Elisabeth Ostrom	Met Office
19	Ground crew	Martin Darling	Avalon Aero
20	CCM	Sue Angold	Directflight

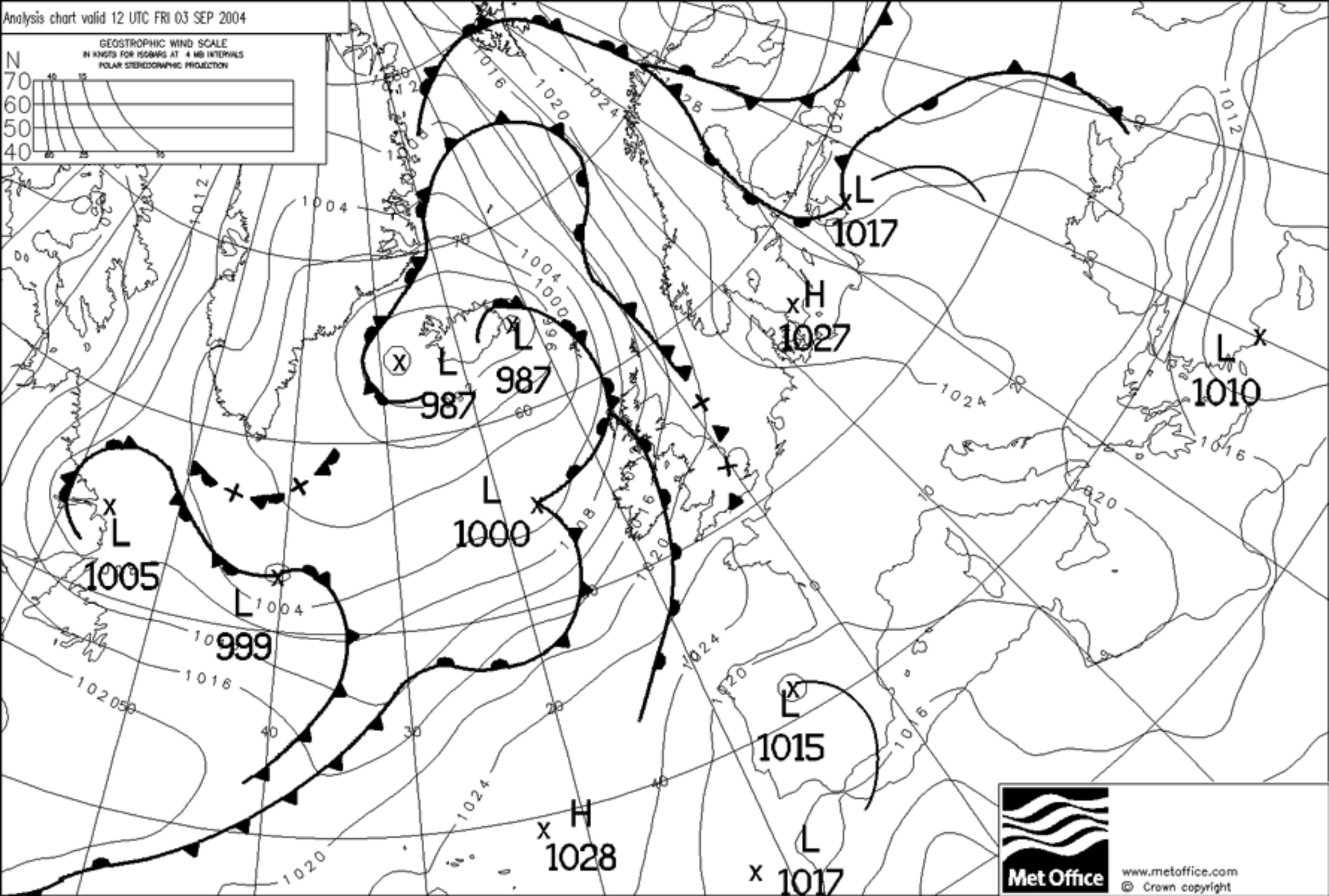
Flight Track:



FLIGHT SUMMARY

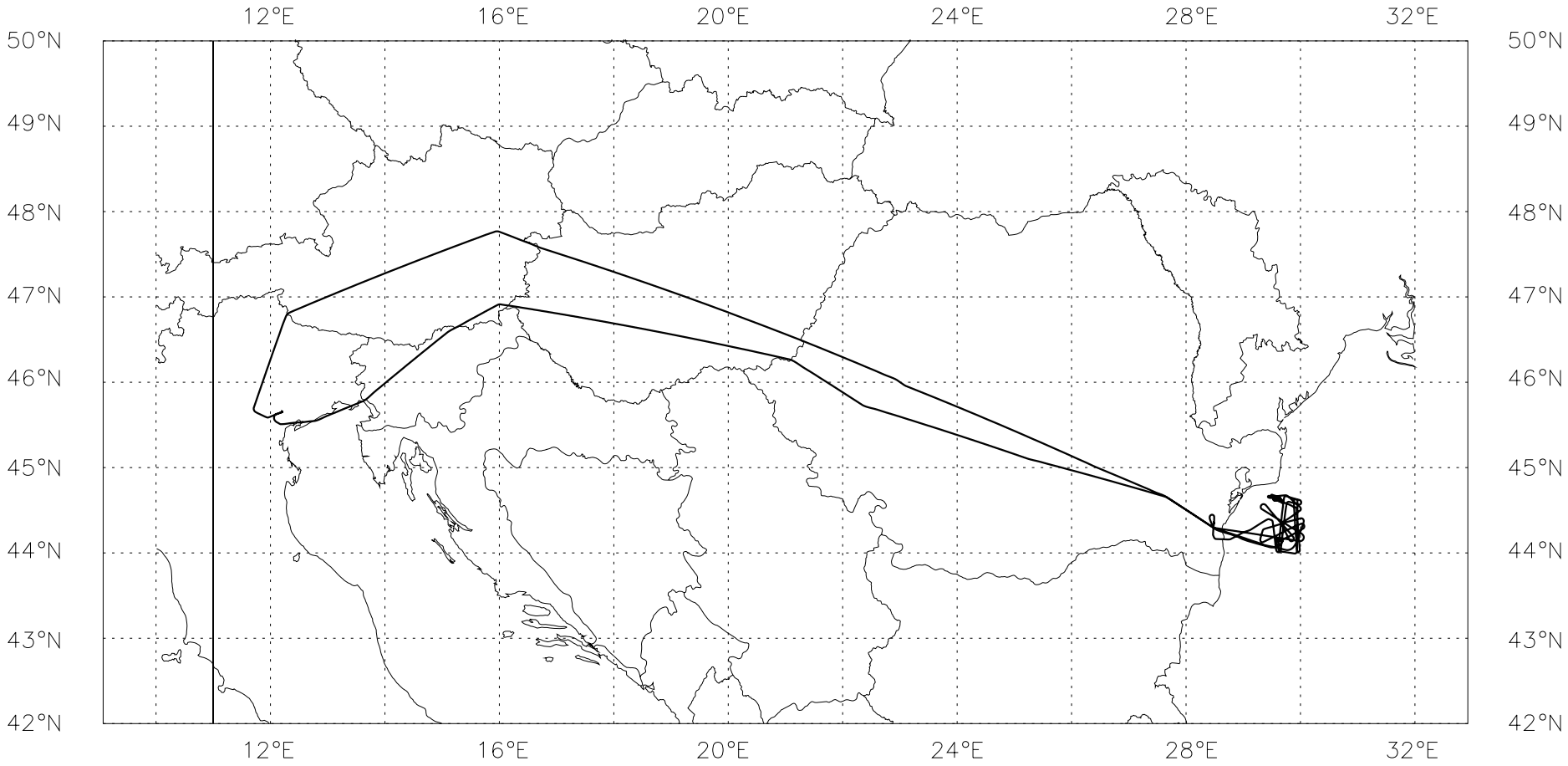
Flight No B048
Date: 03/09/04
Project: ADRIEX
Location: Black Sea

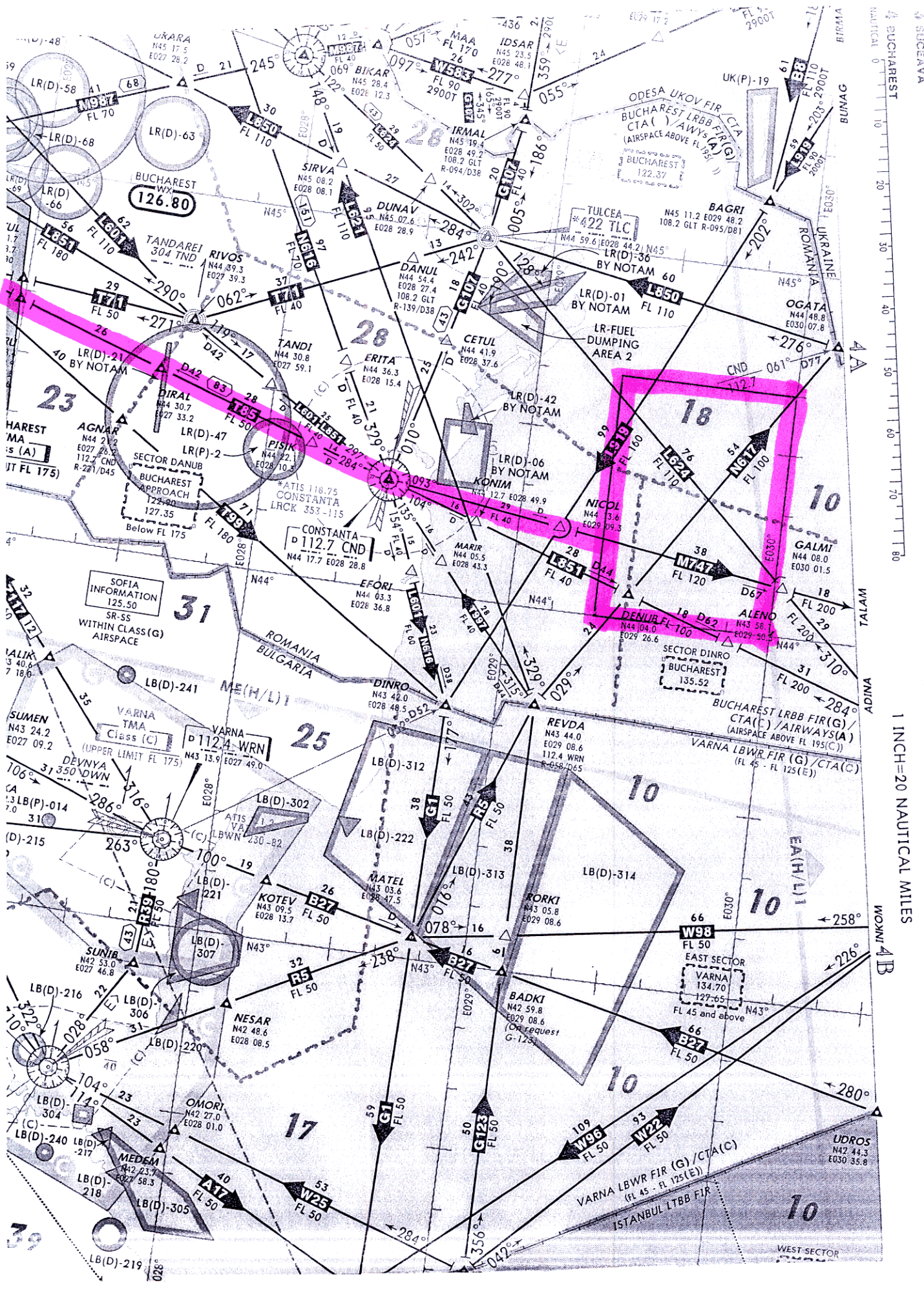
Start Time	End Time	Event	Height (s)	Hdg	Comments
045000		UBBRs	-.18 kft	024	Covers OFF
053830		INU	-.17 kft	024	To NAVIATE
060701		T/O	2.1 kft	240	Treviso
081748	082424	Run 1	25.0 kft	096	
082215		Sonde	25.0 kft	097	Launch 01
082437	082706	Profile 1	25.0 - 22.7 kft	097	1000fpm , Interrupt
082913	083629	Profile 1	22.7 - 14.1 kft	300	
083400		TERRA	16.2 kft	301	Overpass
083835	084506	Profile 1	14.1 - 7.7 kft	139	
084500		ATSR			Overpass
084657	084953	Profile 1	7.7 - 4.6 kft	328	
085100	085445	Profile 1	4.6 - 0.16 kft	066	
085658	085920	Profile 1	1.6 - 0.82 kft		
090004	090124	Profile 1	0.82 - 0.05 kft		
090505	090630	Orbit 1	0.50 up & down		45deg,LH start 150
090800	090928	Orbit 2	0.50 up & down		start 330
091056	091337	Orbit 3	0.50 up & down		start 150
091337	091506	Orbit 4	0.50 up & down		start 330
092246	092416	Orbit 5	0.35 - 0.21 kft	312	38deg,LH start 330
092548	092715	Orbit 6	0.48 - 0.28 kft	146	start
092830	092959	Orbit 7	0.25 - 0.28 kft	324	start 330deg
093119	093253	Orbit 8	0.35 - 0.29 kft	136	start 150deg
093938	094439	Run 1.1	1000ft	171	
094607	095107	Run 1.2	1000ft	355	
095129	095240	Profile 2	-.01 - 0.66 kft	000	
095209		PSAP 1	0.37 kft	359	Change Filter
095734	100635	Run 2	1.0 kft	179	
100733	101017	Profile 3	1.0 - 3.0 kft		
100920		PSAP	3.2 kft	325	Pump OFF, cloud
101324		PSAP	3.2 kft	008	Pump ON
101117	102111	Run 3	3.5 kft	008	
102213	102432	Profile 4	3.2 - 5.4 kft	103	1000fpm
102611	102801	Profile 4	5.5 - 7.0 kft	286	
102904	103652	Run 4	7.0 kft	192	
103826	104324	Profile 5	7.0 - 12.0 kft	345	1000fpm
104507		Sonde	12.0 kft	245	Launch 02
104530	104911	Run 5	12.0 - 9.3 kft	244	
105857		Land	0.05 kft	184	Constanta
					Refuel
110941		INU Align	0.04 kft	129	44'20.83N, 028'28.91E
124333		INU NAV	0.05 kft	129	
125726		T/O	1.1 kft	002	Constanta
125726	130401	Profile 6	0.0 - 5.0 kft	147	
130546	131131	Run 6	5.0 kft	106	
131131	131409	Profile 7	5.0 - 3.3 kft	102	
131516	131722	Orbit 9	3.3 kft	004	35deg,RH,start060
131841	132006	Orbit 10	3.3 - 3.4 kft	189	start 190deg
132130	132258	Orbit 11	3.5 - 3.2 kft	266	start 270deg
132414	132541	Orbit 12	3.3 kft	046	start 060deg


Analysis chart valid 12 UTC FRI 03 SEP 2004
GEOSTROPHIC WIND SCALE
IN KNOTS FOR ISOBARS AT 4 MB INTERVALS
POLAR STEREOGRAPHIC PROJECTION
N
70
60
50
40
L 1017
H 1027
L 1010
L 987
L 987
L 1000
L 1005
L 999
H 1028
L 1015
L 1017
Met Office
www.metoffice.com
© Crown copyright

132736	132855	Run 7	3.2	kft	064	
132855	133108	Profile 8	3.2 - 4.9	kft	059	1000fpm
133302	134049	Run 8	5.0	kft	253	Into Sun
134203	134333	Profile 9	5.0 - 6.0	kft	009	1000fpm Down Sun
134340	135108	Run 9	6.0	kft	067	
135218	140033	Profile 10	6.0 - 15.0	kft	199	1000fpm
140142		Sonde	15.0	kft	283	Launch 03
140235	140915	Run 10	15.0	kft	287	
140420		Sonde	15.0	kft	288	Launch 04
153451		Neph Time	26.0	kft	287	50s slow
153517		PSAP Time	26.0	kft	287	10s fast
164010		Land	-.16	kft	069	Treviso
165059		GPS Posn	-.16	kft	024	45'39.18N, 012'12.13E

B048 Track 03-SEP-04




BUCHAREST
126.80
TANDAREI
304 TND
RIVOS
N44 39.3
E027 39.3
SIRVA
N45 08.2
E028 08.1
DUNAV
N45 07.6
E028 28.9
IRMAL
N45 19.4
E028 49.2
108.2 GLT
R-094/D38
IDSAR
N45 23.5
E028 48.1
BIKAR
N45 28.4
E028 12.3
MAA
FL 170
FL 90
2900T
BAGRI
N45 11.2 E029 48.2
108.2 GLT R-095/D81
TULCEA
422 TLC
N44 59.6 E028 44.2
DANUL
N44 54.4
E028 27.4
108.2 GLT
R-139/D38
CETUL
N44 41.9
E028 37.6
ERITA
N44 36.3
E028 15.4
TANDI
N44 30.8
E027 59.1
DIRAL
N44 30.7
E027 33.2
AGNAR
N44 27.2
E027 26.2
112.7 CND
R-221/D45
PISIK
N44 22.1
E028 10.3
KONIM
N43 12.7 E028 49.9
NICOL
N44 13.6
E029 09.3
DENUR FL 100
N44 04.0
E029 26.6
ALENO
N43 58.1
E029 50.5
GALMI
N44 08.0
E030 01.5
OGATA
N44 48.8
E030 07.8
CONSTANTA
D 112.7 CND
N44 17.7 E028 28.8
MARIR
N44 05.5
E028 43.3
EFORI
N44 03.3
E028 36.8
DINRO
N43 42.0
E028 48.5
REVDA
N43 44.0
E029 08.6
112.4 WRN
R-058/D65
MATEL
N43 03.6
E028 47.5
KOTEV
N43 09.5
E028 13.7
RORKI
N43 05.8
E029 08.6
BADKI
N42 59.8
E029 08.6
(On request
G-123)
NESAR
N42 48.6
E028 08.5
SUNIB
N42 53.0
E027 46.8
OMORI
N42 27.0
E028 01.0
MEDEM
N42 23.7
E027 58.3
UDROS
N42 44.3
E030 35.8
VARNA
N43 13.9 E027 49.0
112.4 WRN
DEVNYA
VOR/DME
LBWN 230-82
SOFIA
INFORMATION
125.50
SR-SS
WITHIN CLASS(G)
AIRSPACE
VARNA
TMA
Class (C)
(UPPER LIMIT FL 175)
BUCHAREST
APPROACH
122.90
127.35
Below FL 175
SECTOR DANUB
SECTOR DINRO
BUCHAREST
135.52
EAST SECTOR
VARNA
134.70
127.65
FL 45 and above
BUCHAREST LRBB FIR(G)/
CTA( )/AIRWAYS(A)
(AIRSPACE ABOVE FL 195(C))
VARNA LBWR FIR (G)/CTA(C)
(FL 45 - FL 125(E))
ISTANBUL LTBB FIR
WEST SECTOR
ODESA UKOV FIR/CTA
BUCHAREST LRBB FIR(G)
CTA( )/AWYS(A)
(AIRSPACE ABOVE FL 195)
BUCHAREST
122.37
UK(P)-19
LR(D)-01
BY NOTAM
LR(D)-06
BY NOTAM
LR(D)-21
BY NOTAM
LR(D)-36
BY NOTAM
LR(D)-42
BY NOTAM
LR(D)-47
LR(P)-2
LR-FUEL
DUMPING
AREA 2
LB(D)-241
LB(D)-312
LB(D)-222
LB(D)-313
LB(D)-314
LB(D)-302
LB(D)-221
LB(D)-307
LB(D)-306
LB(D)-304
LB(D)-305
LB(D)-216
LB(D)-220
LB(D)-240
LB(D)-217
LB(D)-218
LB(D)-219
LB(P)-014
LB(D)-215
ROMANIA
BULGARIA
UKRAINE
ROMANIA
BUNAG
TALAM
ADINA
MONKI
1 INCH=20 NAUTICAL MILES
SUCEAVA
BUCHAREST

FAAM Sortie Brief

ADRIEX: pollution from Western and Eastern European Pollution.

Flight No: B048 Date: 3rd September 2004

Trial objectives:
To determine the physical, chemical and radiative properties of aerosols from east European pollution sources.

Location:
The Black Sea.

Weather:
Anticyclonic conditions; cloudless skies; advection of pollution over sea areas.

Flight pattern:

1. Take off from Treviso airport at 0600 GMT [0mins]
2. High speed transit out towards Constanta at FL250 [140mins]
3. Carry out a broken profile descent from FL250 to 50ft off the coast of the Black Sea [170mins]
4. Perform a set of 4 orbits banked at ~45deg at 500ft [180mins]
5. Carry out a 10min holding pattern [190mins]
6. Perform a set of 4 orbits banked at ~45deg at 500ft [200mins]
7. Carry out a stacked profile ascent to FL150, interrupting to perform 10 min straight and level runs at 5 levels orientated into- and down- Sun; the levels will be called by the aircraft scientist [270mins]
8. Carry out a broken profile descent from FL150 to 50ft [290mins]
9. Transit and land at Constanta [305mins]
10. Refuel
11. Take-off Constanta 1300 GMT [0mins]
12. Transit out at low level to the operating region over the Black Sea [10mins]
13. Perform a set of 4 orbits banked at ~45deg at 500ft [20mins]
14. Carry out a 10min holding pattern [30mins]
15. Perform a set of 4 orbits banked at ~45deg at 500ft [40mins]
16. Carry out a stacked profile ascent from 50ft to FL150, interrupting to perform 10 min straight and level runs at 5 levels orientated into- and down- Sun; the levels will be called by the aircraft scientist [100mins]
17. Perform a box pattern at FL150 consisting of 5 min legs with outside turns; the legs to be orientated into-, across-, down- and across- Sun [130mins]
18. High speed transit back to Treviso at FL250 [270mins]
19. Land Treviso airport.

Sortie Debrief

Flight Number: B048 Date: 3rd September 2004

Sortie Objectives: ADRIEX flight to investigate pollution over the Black Sea.

Operating area: Transit, followed by operations over ocean areas off the coast of Romania within the Bucharest FIR. Transit back.

Weather: In the operating area there was a clear slot with no cloud at all. Further off the coast there was a gradual increase in cumulus humulus, with more significant cloud fractions on occasion during the flight. A layer of pollution extended from close to the surface to approximately 2,000ft, followed by the tenuous cloud layer and another separate layer of pollution from approximately 5,000ft-10,000ft. No Ci was encountered during the operational science part of the flight.

Flight Patterns:
Subsequent to take off from Treviso at ~06:05Z, a long transit was performed to Constanta, Romania. During this transit SWS was operated, and was operated as a sun-photometer for a portion of the flight as the run was exactly into-sun (fortuitously) Over the Black Sea, a run was commenced and a sonde was dropped from FL250. It might be possible to diagnose the direct radiative forcing from the lower BBRs as there was little (if any) in the way of cloud present for much of R1. A profile descent was made from FL250 to 50ft, although this profile was interrupted several times for ATC, and operating area restrictions. A series of 8 orbits were then performed at ~500ft using the Haywood manoeuvre to prevent gyro jamming. A SLR at 100ft was then performed in two legs; into- sun and down- sun. There was a little Cu around and though SWS should work OK, probably the upper BBRs will not work as a method for determining the aerosol optical depth. Subsequently a short profile ascent to 1000ft was performed where an into-sun SLR was performed. Good run for the SWS and BBRs. A short profile ascent to 3500ft was performed, followed by a SLR at 3500ft. At this level we were above all of the Cu, but below the majority of the upper pollution layer. A run was then performed within the main pollution layer at 7,000ft, before a run above the pollution layer at FL120 was performed. A sonde was dropped and during this run the lower BBRs could probably be used to determine the direct radiative effect. The aircraft then recovered to Constanta for re-fuel.

Having refuelled, take-off was at ~12:58Z. A SLR was performed for a short time at FL50, followed by a set of 45degree banked orbits at 3,500ft, which was above the low level pollution layer, but below the upper pollution layer. This should enable the difference in the upper and lower pollution layers to be determined from measurements of the sky radiance with the SWS. The solar zenith angle was around 55degrees so the SWS instrument was run without neutral density filters. Two into and down sun SLRS were then performed at FL50 and FL60 within the upper aerosol layer. A profile ascent was then made to FL150, and two sondes were dropped (the first did not produce winds). During the run at FL150, there was no cloud below for a significant period of time, and the lower clear BBR showed approximately 110Wm^{-2} suggesting a significant direct radiative effect. Subsequently a long transit was performed back to Treviso though little science was performed except for SWS work.

Problems:
Ci intrusions.
PSAP recorded onto Paola's laptop.
Nepheloemeter recorded onto a FAAM laptop.
The problem with the nephelometer and PSAP had been diagnosed following the previous flight to a problem with bit 10 of the neph and PSAP DLU. This may prove tricky to account for.
PCASP missing 3 smallest channels.

Aircraft Scientist's Log

Terra 08:34
Aqua 10:16
AATSR 08:45

Flight No B.048..... Date ...3 Sept 2004 Page 1 of .....

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
~06:07					T/O Treviso
					Very hazy, no cloud.
					Visibility ~ 5-10km.
					Top of haze ~5000ft.
					ETA Constenta 08:18.
[redacted]	[redacted]	FL250			Sat overpasses MODIS T 08:34
					MODIS A 10:16
					AATSR 08:45
					SWS got a couple of measurements
					@ FL250 into sun (by luck).
					Also requested step angle
					scanning e.g. 10° off sun,
					20° off sun, 30° .... etc.
08:16					Crossing Black Sea coast.
08:17:48	R1 St	FL250			Cloud to the RHS & ahead. Might be able to get DRES
					Cu starting off coast
08:22:15	Drop #1	FL250			Sonde #1.
08:24:24	End R1				Cu below, very scattered << 1/8.
08:24:37	P1 St	FL250			End Run.
08:27:06	Int P1	FL227			Turn back towards land.
08:29:13	Recon P1	FL227			O_3, CO + SO_2 showing
					structure, Towards land ~~away from~~
08:36:29	Int P1	FL140			Haze below
08:38:34	Recon P1	FL140			Top ~~of layer~~ ~ 10,500ft.
					Away from land

Top 10,000

100ft ✓
~~300ft~~
1000ft
3000
7000ft

T 08:34
A 10:16
AA 08:45

Aircraft Scientist's Log

Flight No **B** 048 Date 3 Sept 2004 Page 2 of .....

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
					Continuing away from land profile
08:45:12	Int P1	FL~~80~~			Towards land
08:47:03	Recom P1	FL80 ↓			←
08:49:53	Int P1	FL50			Redirection to cloud free-ish area
08:51:00	Restart P1	FL50 ↓	050M		Cloud tops at 2500ft
					Cloud bottom at 2000ft.
					Rate change to 500ft/minute
					under cloud.
08:54:45	Int P1	1600ft			Very hazy.
08:56:58	Recom P1				Some oil rigs.
	Int P1	820ft			Hazy.
	Recom P1		268T		
09:01:24	End P1	50ft			
					Set-up for orbits.
					Orbits, free from cloud — No cloud
	St 01	~~5~~00ft			40° RWD orbit.
09:06:30	End 01	~~8~~			manouver — Good
	St 02	540ft			40° RWD orbit
09:09:23	End 02	~~55~~			Free from all cloud.
09:10:56	St 03	500ft			
09:12:26	End 03				
09:13:37	St 04	540ft	330M		Excellent!!!
	End 04				Rockets being fired in a
					closeby range.

12,000 Not into sun/ down sun

Aircraft Scientist's Log

Flight No **B**.048..... Date 3Sept 2004 Page 3 of .....

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
09:22					Repositioning + holding
					pattern for 2nd set of albits.
09:22:46	St 05	500ft			Variations about 150ft.
09:24:16	End 05				
09:25:48	St 06	500ft			
09:27:15	End 06				
09:28:30	St 07	500ft			Good!
09:29:59	End 07				
09:31:13	St 08	500ft			
~~09:31:~~ 09:32:53	End 08				
					Repositioning for SkRs into
					& down-sun. Trying to
					find best cloud-free
09:38:38	St R2.1	100ft	172T		Sea state 3/4 12kts, into-sun
					A few scattered Cu <1/8.
09:44:39					SWS will find areas through.
09:46:07	St R2.2	100ft	356T		— " — Down-sun
					BBRs might be worth a
					look, but probably not.
09:51:29	End R1.2				Profile ascent
— " —	St P2	100ft↑			
0952:40	End P2	1000ft			~~Into-sun run.~~
10:57:40	St R2	1000ft			Into-sun run.
					BBRs could be used in
					first part until ~ 10:00:00
					or maybe further.
					~~HSRL~~ Good news as we
					have DRE + AOD...

06Z T/O

Aircraft Scientist's Log

Flight No B...048... Date ...3 Sept... Page ...4... of .....

FAAM © 2004

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
10:04:40	-				No Ci in region so far
					at all. — 10,500 Pollution top
					Into-sun run — pollution
					2000-2500 cloud
					pollution
					surface
10:06:35	End R2				
					Turn followed by profile
					ascent.
10:07:33	St P3	1000ft↑	280M		
10:10:17	End P3 /	3,500ft			Cu below, upper BBRs can be
	St R3				used here for good analysis.
					4/8 Cu below. Down-sun
10:21:11	End R3	3,500ft			Lower pollution at end of run
10:22:13	St P4	3,500ft↑			1000ft/min.
					Climb into main pollution
					@ 4000ft
10:24:32	Int P4	5,500ft			Interrupt Profile.
	Restart P4	5,500ft↑			No cloud above, lots of
10:26:11	End P	7,000ft			haze.
10:29:04	St R4	FL070→			Into-sun run. — Good for BBR (upper)
10:36:52	End R4	FL070→			
10:38:26	St P5	FL70↑			Start profile ascent.
10:43:24	End P5	FL120→			End profile.
10:45:07	D#2				Very little cloud below
10:45:30	St R#5	FL120→			Lower BBRs could be

used, probably from a little before + further. We have DRE + AOD.

Aircraft Scientist's Log

Flight No **B**...048..... Date ...3 Sept 2004... Page ...5... of .....

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
10:49:11	End R5				
					Top of aerosol ~ 10,000 ft.
					No time for profile descent.
					Very hazy throughout descent.
					Lots of agriculture around Constanta.
					Burning agriculture on RHS on approach to airport.
					Landing 1020 kg LHS 1100 kg RHS.
					= Refuel Constanta, Romania
~ 12:58:30					Take off Constanta.
					Quite a few small biomass fires.
					Mainly agricultural land
13:01:51	St P6	3,600ft ↑			Ragged 1000ft/min profile ascent to FL50
13:04:01	End P6	5,000ft			
13:05:46	St R6	FL50 →			Very hazy at this level
					A few very scattered Cu ahead and below. No upper cloud.
13:11:31	End R6/St P7	FL50 ↓			Profile descent.
13:14:09	End P7/St 09	3,500ft			
13:16:49	St 09	3,500ft →			45° RHD banked orbits.
13:17:22	End 09				

Aircraft Scientist's Log

Flight No B.048..... Date .....3 Sept 2004 Page 6.... of .....

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
					First orbit v. good.
					No Ci above.
13:18:41	St 010	3,500ft	190		Below haze layer (but above MBL haze). In clear slot. 45°
13:20:06	End 010				
13:21:30	St 011	3,500ft			45° RWD orbit
~~13:22:58~~	End 11 Orbit				
13:24:14	St 012	3,500ft			45° RWD orbit.
13:25:41	End Orbit 12				
13:27:36	St R7				Start run.
13:28:55	End R7 St P8	3,500ft↑			End run. 1000ft/minute profile ascent.
13:31:08	End P8	5,000ft			
13:33:02	St R8	5,000ft			Extremely good → no cloud above or below for all this run, except the very end. SWS stepping through 100 as wing interfering
13:40:49	End R8	5,000ft		Wo snapshot 0.86	
13:42:03	St P9	5,000ft↑		sza 58°	Profile ascent at 1000ft/min
13:43:33	End P9	6,000ft		ω_0 0.86	
13:44:07	St R9	6,000ft →			Excellent run in thick haze
13:51:08	End R9	6,000ft →		sza 62°	SWS working as photometer despite sza.
13:52:18	St P10	6,000ft↑			Profile ascent.
					Top of haze diffuse at 8,500ft → 10,000ft.
					A strange chemistry & neph signal at the very top of the aerosol layer observed

30 miles ~ 3min Cluing

300ft/min
1200ft
= 200ft/min

Aircraft Scientist's Log

<7000ft >18000ft

Flight No **B**...048..... Date ...3/09/04..... Page ...7... of .....

FAAM © 2004

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
	P(cont)				FL140 → very clear above with
					thick haze below, a few Cu too
14:00:33	end P10				<< 1/8
14:01:42	~~D#3~~				
14:02:35	start R10	FL150			Can use data before this, but
					cloudy.
14:03:45					Cloud below has gone.
14:04:20	D#4	FL150.			Good for BBR DRE here
					lower clear BBR< 110 W m^{-2}
					and steady!! No Ci
					above, no Cu below.....
14:09:15	End R10/Climb	FL150 ↑			Climb to FL270, not a profile,
					but could use the data.
15.04.00		FL260	294		clear cloud around aircraft, very hazy
					over mountain ~~scattered sheets of Sta~~ Alst ahead and to right
150630					CuNi on left far away ~100 miles
					layer of Ci ahead with Alst/StCu below
150940		FL260	293		red neph above green! sampling artifact?
					hazy above low cloud and above Ci
151400					
					very moist between stCu "moist bubbles"
15.22					6/8 StCu with Ci in front
					very hazy between StCu
15.32			288		less StCu much more haze below
					long line of ci ahead crossing

flight path at right angle

Aircraft Scientist's Log

Flight No **B**..... Date ..... Page ..... of .....

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
15.51	—	26 kft.			Haze to the North towards the
.					Czech Rep. Cu to the South.
15.52					Turn to the South, over the
					Austrian Alps - scattered Cu.
					Clear sky directly above.
					Cu cloud top popping out of
					aer. layer.
15.57	—	26,000			Thick haze to the South
					- Alps acting as a barrier to
					the North ~~[illegible]~~

CLOUD PHYSICS LOG

Flight No. B048 **Date: 3/9/04** **Operator: MAP** **Page 1 of 5**

G.M.T.	PCASP		FSSP	SID1	2D2-C			2D2-P			Remarks
DRS Time	Conc/cc	Mean R	Block Transfer	Particle Count	Conc/L	Max Size	Habit	Conc/m3	Max Size	Habit	
08:17:48			U/S								Star Run 1 @ FL250
08:18:00	2										
08:20:00	2										
08:22:00	2										
08:24:26											End of Run 1
08:24:38	2										Start Profile 1 From FL250
08:25:40	1										FL240
08:26:42	2										FL230
08:29:55	2										FL220
08:30:58	5										FL210
08:31:37	5										FL200
08:32:20	5										FL190
08:33:13	6										FL180
08:33:58	1										FL170
08:34:50	2										FL160
08:35:45	3										FL150
08:36:35	5										FL140
08:39:25	5										FL130
08:40:30	5										FL120
08:41:43	130			2							FL110
08:42:40	400			5							FL100
08:43:42	300			5							FL090
08:44:45	400			5							FL080
08:47:30	500			5							FL070
08:48:38	700			5							FL060
08:49:40	500			5							FL050
08:51:55	500			5							FL040
08:52:55	140			5							FL030
08:53:45	900			10							FL020
08:58:12	1000			10							1000’
09:00:30	800			10							500’
09:01:26	600			10							End of Profile 1

CLOUD PHYSICS LOG

Flight No. B048 **Date: 3/9/04** **Operator: MAP** **Page 2 of 5**

G.M.T.	PCASP		FSSP	SID1	2D2-C			2D2-P			Remarks
DRS Time	Conc/cc	Mean R	Block Transfer	Particle Count	Conc/L	Max Size	Habit	Conc/m3	Max Size	Habit	
09:05:05											Start Orbits
09:15:06											End of Orbits (4)
09:22:48	HEATER	OFF									Start Orbits
09:32:56											End of Orbits (8)
09:39:40											Start Run 1.1 @ 100’
09:40:00	700			10							
09:42:00	680			10							
09:44:00	740			10							
09:44:42											End of Run 1.1
09:46:10											Start Run 1.2 @ 100’
09:47:00	680			10							
09:49:00	640			10							
09:51:10											End of Run 1.2
09:51:25	600			10							Start Profile 2 from 100’
09:52:43	550			10							End of Profile 2 @ 1000’
09:57:40											Start Run 2 @ 1000’
09:58:00	650			10							
10:00:00	650			10							
10:02:00	700			10							
10:04:00	730			10							
10:06:00	650			10							
10:06:38											End of Run 2
10:07:34	680			10							Start Profile 3 from 1000’
10:08:50	660			10							2000’
10:09:55	200			10							3000’
10:10:17	400			10							End of Profile 3 @ 3500’
10:11:20											Start Run 3 @ 3500’
10:12:00	300			10							
10:14:00	340			10							
10:16:00	320			10							
10:18:00	350			10							
10:20:00	170			10							

CLOUD PHYSICS LOG

Flight No. B048 **Date: 3/9/04** **Operator: MAP** **Page 3 of 5**

G.M.T.	PCASP		FSSP	SID1	2D2-C			2D2-P			Remarks
DRS Time	Conc/cc	Mean R	Block Transfer	Particle Count	Conc/L	Max Size	Habit	Conc/m3	Max Size	Habit	
10:21:14											End of Run 3
10:22:16											Start Profile 4 from 3500’
10:23:11	330			2							FL040
10:44:10	300			2							FL050
10:26:50	370			2							FL060
10:28:00	300			2							End of Profile 4FL070
10:29:04											Start Run 4 @ FL070
10:30:00	340			2							
10:32:00	320			2							
10:34:00	310			2							
10:36:00	300			2							
10:36:55											End of Run 4
10:38:30	315			2							Start Profile 5 from FL070
10:39:28	300			2							FL080
10:40:25	260			2							FL090
10:41:20	210			2							FL100
10:42:20	20										FL110
10:43:25	4										End of Profile 5 @ FL120
10:45:33											Start Run 5 @ FL120
10:46:00	1										
10:48:00											
10:50:12											End of Run
13:57:56	HEATER	ON									Start Profile 6 from FL120
13:04:01											End of Profile 6 @ FL050
13:05:46											Start Run 6 @ FL050
13:06:00	430			2							
13:08:00	410			2							
13:10:00	480			2							
13:11:30											End of Run Start P7 from FL050
13:13:01	550			2							FL040
13:14:11	410			2							End of Profile 7 @ 3800’
13:16:00											Start Orbits

CLOUD PHYSICS LOG

Flight No. B048 **Date: 3/9/04** **Operator: MAP** **Page 4 of 5**

G.M.T.	PCASP		FSSP	SID1	2D2-C			2D2-P			Remarks
DRS Time	Conc/cc	Mean R	Block Transfer	Particle Count	Conc/L	Max Size	Habit	Conc/m3	Max Size	Habit	
13:25:41											End of Orbits (12)
13:12:36											Start Run 7 @ 3500’
13:28:00	100			5							
13:29:09											End of Run 7 Start P8 from 3500’
13:30:15	310			5							4000’
13:31:12	310			5							End of Profile 8 @ 5000’
13:33:05											Start Run 8 @ 5000’
13:34:00	380			5							
13:36:00	440			5							
13:38:00	440			5							
13:40:00	480			5							
13:40:52											End of Run 8
13:42:06	370			5							Start Profile 9 from FL050
13:43:36	360			5							End of Profile 9 @ FL060
13:44:11											Start Run 9 @ FL060
13:45:00	480			2							
13:47:00	510			5							
13:49:00	480			5							
13:51:09											End of Run 9
13:52:23	440			5							Start Profile 10 from FL060
13:53:27	350			5							FL070
13:54:28	300			5							FL080
13:55:26	310			5							FL090
13:56:25	160			5							FL100
13:57:12	25			5							FL110
13:58:06	5			5							FL120
13:58:55	5										FL130
13:59:44	5										FL140
14:00:46											End of Profile 10 @ FL150
14:02:40											Start Run 10 @ FL150
14:03:00	5										
14:05:00	5										

CLOUD PHYSICS LOG

Flight No. B048 **Date: 2/9/04** **Operator: MAP** **Page 5 of 5**

G.M.T.	PCASP		FSSP	SID1	2D2-C			2D2-P			Remarks
DRS Time	Conc/cc	Mean R	Block Transfer	Particle Count	Conc/L	Max Size	Habit	Conc/m3	Max Size	Habit	
14:07:00	5										
14:09:00	8										
14:09:19											End of Run 10
PCASP CH 4-15 Only FFSSP Laser Power supply SEADAS tape time offset = 0											

SWS/SHIMS PRE-FLIGHT LOG	Date	3/9/08	Flight	B048
Operator(s)			Campaign	ADRIEX
Departure			Arrival	

Physical system setup

Module Number	Connection(e.g.SWS nir, SHIMS upper)
0	SWS NIR
27581	SWS VIS

System functionality check

PC to DRS Time error	After system stabilizes $t_{PC}=t_{DRS}$ +	0 secs	at time	0600Z	
Freezer temp	-6°C				

SWS FLIGHT LOG SHEET

Flight # B 048 | Date 3/9/04 | Operator(s) A. WILSON | log page 1 of 4

Time	Run id	Alt/FL	Mirr Pos	Int Times Vis	Int Times NIR	Remarks East-West flight. Black Sea.
061100			0°			Dark current view.
065800						TRANSIT TO Black Sea.
065830			54°F	Auto		almost flying into Sun. Having a look
071600			54°F	Auto		Solar Azimuth 115.8°. INS heading 99.4°.
						SWS signals probably Sun reflection
						off aircraft fuselage.
072400	TRANSIT	250	50°F	Auto		Solar azimut 117.8°. INS HEADING 120°
						Almost directly into Sun. Will
						perform a series of 10° fore → Aft
						scans. FILTERS NOT Fitted.
072715	TRANSIT	250	40°F	Auto		
072940		250	30°F			
073130		250	20°F	Auto		Changing course now. Heading to
073630	transit	250	10°F	Auto.		Constanta. Zenith 121°. INS Heading 103°.
073840		250	0°	Auto		Zenith 123.3. INS heading 105.9°.
074155		250	10°A	Auto		Zenith 124. INS heading 106.9°
074425		250	20°A	Auto		-"- 125.6 -"- 106.8°
074630	TRANSIT	250	30°A	Auto		-"- 125.6 -"- 107.1
074840			40°A	Auto		-"- 127.1 -"- 107.6
075120	TRANSIT	250	50°A	Auto		127.9 107.75
075450			60°A	Auto		129.5 103.66
080000	Transit	250	0°	Auto		131.2 104.2°
						End of transit.
081748	R1	250	0°	Auto		Start R1
081934						Video start
082215	Sonde 1	250	0°	Auto		Dropsonde 1
082430	R1	250	0°	Auto		end R1
082437	P1	250	0°	Auto		Start P1 FL250 → 50ft
082706	P1	22700	0°	Auto		INT P1
082913	P1	22700	0°	Auto		restart P1
083638	P1	14000	0°	Auto		int P1
083834	P1	FL140	0°	Auto		restart P1
084512	P1	FL076	0°	Auto		int P1
084703	P1	FL076	0°	Auto		restart P1
084953	P1	FL046	0°	Auto		interrupt P1
085100	P1	FL046	0°	Auto		restart P1
085445	P1	1600ft	0°	Auto		int P1
085658	P1	1600ft	0°	Auto		restart P1
	P1		0°	Auto		interupt
090000	P1		0°	Auto		restart P1
090154	P1	50ft	0°	Auto		end P1

SWS FLIGHT LOG SHEET

Flight # B048 | Date 3/9/04 | Operator(s) A. WILSON | log page 2 of 4

Time	Run id	Alt/FL	Mirr Pos	Int Times Vis	Int Times NIR	Remarks
090340		400ft.	6°F	10	10	for orbits.
090505	orbit 1	400ft	6°F	10	10	40° Right wing down.
090630	" 1	400ft	6°F	10	10	end
090800	" 2	400ft	6°F	10	10	start orbit 2
090928	" 2	400ft	6°F	10	10	end orbit 2
091056	" 3	400ft	6°F	10	10	start 3
091224	" 3	400ft	6°F	10	10	end 3
091337	" 4	400ft	6°F	10	10	start 4
091506	" 4	400ft	6°F	10	10	end 4
092100						ND 3.0 FILTERS FITTED TO NIR & VIS
092246	orbit 5	400ft	6°F	10	30	38° orbit Right wing down
092416	" 5	400ft	6°F	10	30	end orbit 5
092548	" 6	400ft	6°F	10	30	start 6
092715	" 6	400ft	6°F	10	30	end 6
092830	" 7	400ft	6°F	10	30	start 7
092959	" 7	400ft	6°F	10	30	end orbit 7
093119	" 8	400ft	6°F	10	30	start 8
093253	" 8	400ft	6°F	10	30	end orbit
093500			0°	Auto		
093938	R1.1	100ft	44°F	Auto		into Sun Run - Zenith 37.2 Pitch 5.6
						Various small fragments of blue Cu above.
094439	R1.1	100ft	44°F	Auto		end R1.1
094607	R1.2	100ft	31°A	10	30	Down Sun Run Zenith 37 Pitch 5.4
095107	R1.2	100ft	31°A	10	30	end R1.2 Manual integration chosen as
095129	P2	100ft	31°A	10	30	start P2 more stable
095240	P2	1000ft	32°A	10	30	end P2
095740	R2	1000ft	44°F	10	30	into Sun. Zenith 37.4 Pitch 5.74
100635	R2	1000ft	44°F	10	30	end R2
100733	P3	1000ft	0°	10	30	start P3 →3000ft
101017	P3	3500ft	0°			end P3
101117	R2.1	3500ft	31°A	10	30	down Sun. Zenith 36.8° Pitch 5.1
						IR max ~ 31°A. Vis MAx ~31°A
102115	R2.1	3500ft	31°A	10	30	end R2.1
102213	P4	3500ft	0°	Auto		start P4 → FL070
1024	P4	5500ft	0°	Auto		int P4
102611	P4	5500ft	0°	Auto		restart P4 → FL070
102801	P4	FL070	0°	Auto		end P4
102904	R4	FL070	~43.5°F	15	30	INTO SUN. Zenith 37.8 Pitch 5.5
103652	R4	FL070	~43.5F	15	30	end R4
103826	P5	FL070	0°	Auto		P5 → FL120
104324	P5	FL120	0°	Auto		END P5

filters fitted

SWS FLIGHT LOG SHEET

Flight # B048 | Date 3/9/04 | Operator(s) A. WILSON | log page 3 of 4

Time	Run id	Alt/FL	Mirr Pos	Int Times Vis	Int Times NIR	Remarks
104510	~~FL120~~	~~FL120~~				
104530	R5	120	0°	AUTO		
110000						LAND @ CONSTANTA.
111000						Video Stop
111103						DARK CURRENT VIEW
111000						FILTERS REMOVED. *
124845						DARK CURRENT VIEW
	SORTIE PART 2					
125000						VIDEO START
125120			90°A			DATA START
125~~3426~~	P6					TAKE off FROM CONSTANTA.
130401	~~R6~~ P6	050	0°	Auto		
130546	R6	050	0°	Auto		
131131	R6	050	0	Auto		
131138	P7	050	0	Auto		
131412	P7	3500ft	0°	Auto		
131615	orbit 9	3500ft	6°F	30	75	start orbit 9
	-"- 9	3500ft	6°F	10	50	end 9. Vis integration changed to prevent saturation of signal
13	-"- 10	3500ft	6°F	10	50	GOOD. No signal integration.
132026	10	3500ft	6°F	10	50	Solar glare just off RHS of Video screen
132130	-"- 11	3500ft	6°F	10	50	
132301	-"- 11	3500ft	6°F	10	50	
132414	-"- 12	3500ft	6°F	10	100	increased NIR int to boost signal.
132541	-"- 12	3500ft	6°F	10	100	end orbits.
						FILTERS FITTED ND3 VIS & NIR *
133330	R8	5000ft	50°F	AUTO		INBD SUN RUN zenith 58.5 PITCH 6.7
133442	R8	5000ft	40°F	Auto		WING OBSCURES VIEW. Scanning instead
133645	R8	5000ft	30°F	AUTO		
133804	R8	050	20°F	AUTO		
133926	R8	050	10°F	Auto		
134020	R8	050	0°	Auto		
134050	R8	050	10°A	Auto		
134055	R8	050	0°			
1342	P	050	0°	AUTO		P → FL060
134332	P	060	0°	AUTO		
	R9	~~060~~ ~~060~~ 53.5°A	~~60~~°A	15	30	Down Sun Run.
134940	R9	~~060~~ ~~55~~°A	55°A	15	30	Zenith 61.8° Pitch 6.82°
135108	R9	060	55°A	15	30	end of R9
135218	P10	060	0°	Auto		P10 → FL150

FILTERS FITTED * (top)

Filters Fitted * (bottom)

SWS FLIGHT LOG SHEET

Flight # B | Date | Operator(s) | log page 4 of 4

Time	Run id	Alt/FL	Mirr Pos	Int Times Vis	Int Times NIR	Remarks
135915	P10	140	180°	AUTO		FILTERS REMOVED
140033	P10	150	180°	AUTO		
140235	R10	150	180	AUTO		SCIENCE END
163000						DATA STOP
163003						DARK CURRENT MEASURE.
164009						LAND @ TREDSO

CORE CHEMISTRY FLIGHT LOG

FLIGHT: B048	DATE: 03/09/2004	OPERATOR: Doug Anderson	PAGE: 1 of 2
LOCATION: The Black Sea		PROJECT: ADRIEX – pollution from Western and Eastern European Pollution.	

GAS CYLINDER PRESSURES	Argon/CO2	N2	CO	HORACE
PRE FLIGHT	psi / bar	psi / bar	psi / bar	-- n/a --
POST FLIGHT	psi / bar	psi / bar	psi / bar	-- n/a --

TIME (GMT)	HEIGHT (Flight Level)	RUN #	CO SENSITIVITY (Hz/ppbV)	CO BACKGROUND (ppb)	CO BCKGRD.CNT.B (Hz)	CO CONC. (ppb V)	O3 (ppb)	NO (ppb)	NO2 (ppb)	NOx (ppb)	SO2 (ppb)
02/09/04 12:15:30			87.99	59.34	5221.08						
	Remarks: Last calibration from previous flight/ground test for comparison with today.										
03/09/04 05:35:09	ground	-	83.85	60.56	5077.57	427.573	1	94.6	99.2	193.9	8.43
	Flow Lamp: 33.91	Press Monocr 0.61	Press Cell: 7.13	Press Cal Gas 2.52	Lamp °C 50.00	Monocr °C 26.15	PMT °C 26.10				
	Remarks: First cal of day Air sample pipe (ASP) closed. CO cal max values : 497 - 529										
05:43:09	ground	-	82.72	62.18	5143.57	425.411	0	47.0	-2.2	44.8	5.38
	Remarks: ASP closed. CO cal max values : 518 - 524										
06:03:17	ground	taxiing	88.90	61.24	5444.14	115.715	1	22.0	13.2	35.2	4.91
	Flow Lamp: 33.90	Press Monocr 0.61	Press Cell: 7.13	Press Cal Gas 2.51	Lamp °C	Monocr °C	PMT °C				
	Remarks: ASP closed. CO cal max values : 562 – 595										
06:25:40	FL150		84.23	61.81	5206.32	66.212					-
	Flow Lamp:	Press Monocr	Press Cell:	Press Cal Gas	Lamp °C	Monocr °C	PMT °C				
	Remarks: ASP open. CO cal max values : 493 – 497 – poor, cal repeated below										
06:30:35	FL250		84.30	61.42	5177.87	64.484	55	-0.24	0.37	0.14	7.62
	Remarks: CO cal max values : 523 – 527 - better										
07:10:45	FL250	transit	87.58	59.36	5198.97	61.126	61	-0.17	0.35	0.18	7.19
	Flow Lamp: 33.91	Press Monocr 0.46	Press Cell: 7.15	Press Cal Gas 2.42	Lamp °C 50.00	Monocr °C 25.51	PMT °C 25.45				
	Remarks: CO cal max values : 545 – 548										
07:25:03	FL250		87.96	59.10	5198.76	67.988	82	0.19	0.22	0.40	6.99
	Flow Lamp: 33.91	Press Monocr 0.45	Press Cell: 7.13	Press Cal Gas 2.42	Lamp °C	Monocr °C	PMT °C				
	Remarks: CO cal max values : 526 – 531										
07:31:03	FL250		88.22	59.02	5206.50	62.458	-	-	-	-	-
	Remarks: 525 - 528										
08:07:59	Fl250	P	88.33	58.48	5165.78	82.643	65	-0.04	0.24	0.20	7.48
	Flow Lamp: 33.96	Press Monocr 0.45	Press Cell: 7.14	Press Cal Gas 2.41	Lamp °C -	Monocr °C -	PMT °C -				
	Remarks: CO cal max values : 525 - 527										
08:26:01	FL250 – FL235	R1->P1	88.81	58.17	5166.47	87.128	60	0.10	0.34	0.44	6.57
	Flow Lamp: 33.91	Press Monocr 0.47	Press Cell: 7.14	Press Cal Gas 2.39	Lamp °C	Monocr °C	PMT °C				
	Remarks: CO cal max values : 527 - 531										
09:06:37	200'?	Into O1	91.83	57.91	5317.63	127.516	48	-0.00	0.75	0.75	3.98
	Flow Lamp: 33.85	Press Monocr 0.60	Press Cell: 7.15	Press Cal Gas 2.51	Lamp °C	Monocr °C	PMT °C				
	Remarks: CO cal max values : 547 – 544 Note: O1 started 09:04:										
09:21:09	200' ?	-	92.45	57.36	5303.14	135.637	53	0.05	0.91	0.96	3.94
	Flow Lamp: 33.91	Press Monocr 0.60	Press Cell: 7.15	Press Cal Gas 2.52	Lamp °C	Monocr °C	PMT °C				
	Remarks: CO cal max values : 526 - 518										
10:14:00	FL030	-	91.17	57.11	5206.45	117.508	54	-0.00	0.31	0.35	4.03
	Flow Lamp: 33.91	Press Monocr 0.60	Press Cell: 7.15	Press Cal Gas 2.52	Lamp °C	Monocr °C	PMT °C				
	Remarks: CO cal max values : 516 - 518										
10:31:40	FL070	-	90.17	57.53	5187.78	108.154	59	-0.13	0.57	0.49	4.45
	Remarks: CO cal max values : 518 - 524										
10:40:36	FL120		89.96	57.14	5140.77	83.703	62	-0.02	0.09	0.09	4.66
	Flow Lamp: 33.90	Press Monocr 0.56	Press Cell: 7.16	Press Cal Gas 2.48	Lamp °C	Monocr °C	PMT °C				
	Remarks: CO cal max values : 521 - 527										
12:01:12	ground	Constanta	89.70	57.85	5188.67	135.061					
	Remarks: ASP closed.										
12:47:27	ground	Constanta	88.04	58.48	5149.21	140.456	41	-0.11	0.10	-0.01	7.17
	Remarks: ASP closed. TECO Nox cal run at same time as CO cal.										

CORE CHEMISTRY FLIGHT LOG

FLIGHT: B048	**DATE:** 03/09/2004	**OPERATOR:** Doug Anderson	**PAGE:** 2 of 2
LOCATION: The Black Sea		**PROJECT:** ADRIEX – pollution from Western and Eastern European Pollution.	

TIME (GMT)	HEIGHT (Flight Level)	RUN #	CO SENSITIVITY (Hz/ppbV)	CO BACKGROUND (ppb)	CO BCKGRD.CNT.B (Hz)	CO CONC. (ppb V)	O3 (ppb)	NO (ppb)	NO2 (ppb)	NOx (ppb)	SO2 (ppb)
12:58:19	ground	taxiing	91.60	57.99	5311.62	128.33	53	0.03	0.01	0.04	8.63
	Flow Lamp: 33.21	Press Monocr 0.60	Press Cell: 7.15	Press Cal Gas 2.50	Lamp °C		Monocr °C		PMT °C		
	Remarks: ASP closed. CO cal max values : 546 - 566										
13:07:30	FL050	Into R6	87.35	58.87	5142.23	108.739	58	-0.01	0.55	0.54	4.57
	Flow Lamp:	Press Monocr	Press Cell:	Press Cal Gas	Lamp °C		Monocr °C		PMT °C		
	Remarks: ASP open. CO cal max values :498 – 503 NOx zero ended part way through this calibration.										
13:17:57	FL035	Into O9	86.85	58.94	5119.01	113.436	54	-0.07	0.54	0.46	4.49
	Flow Lamp:	Press Monocr	Press Cell:	Press Cal Gas	Lamp °C		Monocr °C		PMT °C		
	Remarks: CO cal max values : 520 - 524										
13:35:33	FL050	Into R	86.65	59.10	5120.63	122.210	53	-0.19	0.72	0.33	3.96
	Flow Lamp:	Press Monocr	Press Cell:	Press Cal Gas	Lamp °C		Monocr °C		PMT °C		
	Remarks: CO cal max values : 520 – 526 Calibration is bad message during first section – allowed instrument to continue to end of cal										
13:47:45	FL060	Into R	86.22	59.26	5109.15	118.368	59	0.01	0.68	0.69	4.24
	Flow Lamp:	Press Monocr	Press Cell:	Press Cal Gas	Lamp °C		Monocr °C		PMT °C		
	Remarks: CO cal max values : 520 - 525										
14:04:12	FL150		86.41	58.89	5088.59	71.628	62	0.00	0.15	0.16	5.10
	Flow Lamp:	Press Monocr	Press Cell:	Press Cal Gas	Lamp °C		Monocr °C		PMT °C		
	Remarks: CO cal max values : 525 - 529										
15:00:56	FL260	-	89.99	56.06	5045.13	61.376	57	-0.08	0.32	0.23	-
	Flow Lamp:	Press Monocr	Press Cell:	Press Cal Gas	Lamp °C		Monocr °C		PMT °C		
	Remarks: CO cal max values : 548 - 545										
::											
	Remarks: ASP closed. CO cal max values :										

Flight Manager's In-Flight Log

Flight No B..048.. Date ..3.9.04..... Page ..1.... of ..3....

Video Tapes
(V8)
No.
Ends
FFC / RFC / DFC / UFC

	GPS	INU
Lat	45°39.18N	45°39.16N
Long	12°12.06E	12°12.06E
Time	05:59:14	055847
Status	✓	NAV

DRS	☑
HORACE	☑
SATCOM	☑

GMT	EVM	Height	QNH	Hdg	TAT	DP	DI Htr	Wind/ Sea st.
060701	TAKE	OFF FROM TREVISO						
	Transit to Black Sea area @					FL250,	DFC	recording
		P1		EVM				
083635	140	Interrupt	P1		Horace fltsim problems.			
083834	FL140	Recomm	P1	2				
084512	FL77	Int	P1					
084703	FL77	Recomm.	P1					
084953	FL46	Int	P1.	3				
085100	FL46.	Recom	P1					
085339	3000'	close	PSAP	Pump.				
085407	2000	change	rod	to 500fem, psap pump on.				
085445	1600'	Interrupt	P1					
085658	1600'	Recom.	P1 ↘	6.				
085920	~~820'~~	Int	P1	7				
090004	820'	Recom	P1 ↘	8				
090124	50'	END	P1 /	~~[illegible]~~				
090505	500'	START	ORBIT 1, 45° LH, start 150° and climbing					
090630	500'	END	01					
090800	500'	START	02 start 330°			090928	END	02
~~[illegible]~~								
091056	500'	START	03, hdg 150°			091224	END	03
091337	500'	START	04, hdg 330°			091506	END	04
		150°						
		(No	Flight on Sun Adriatic + Po Valley)					
095740	1000'	START	RUN 2	Into Sun				
100635	1000'	END	RUN 2					

190 → 3000 1000
~~[illegible]~~
7000
120

Flight Manager's In-Flight Log

Flight No B..048.... Date ...3.9.04..... Page 2 of 3

Video Tapes
V8
No. #2
Ends 1320.
FFC / RFC / DFC / UFC

	GPS	INU
Lat	44'20.83N	44'20.83N
Long	28'28.91E	028 28.91E
Time	12:26:32	12:25:49
Status	✓	ALIGN

DRS	☐
HORACE	☑
SATCOM	☐

GMT	EVM	Height	QNH	Hdg	TAT	DP	DI Htr	Wind/ Sea st.
100733	10000↑	START	PROFILE		3.	100907		
101017	3000'	END	P3					
100920	PSAP	Pump	off – into		cloud.			
101326	PSAP	Pump	ON					
101117	22	3500'	START	RUN 3				
			END	RUN 3				FL70
								ETA 1100Z
105857	LAND	AT CONSTANTIA			4h 55			
		Refuel						
125726	TAKE OFF FROM CONSTANTIA							
131138								
131138	END	RUN 6 / START P7						
131412	END	P7						
	START ORBIT	9,		45°		start 060°		
132301	END	011						
	START	012						
134055	END	RUN 8.						
134208	START	P9	✓					
134340	END	P9 /	START	RUN	9.			
50.	seconds		slow – Neph time (ie Neph behind a/c)					
10.	seconds		faster than a/c – PSAP					
140920	END	RUN 10	FL150					
								1705
					31 50	160 240		
					1431	+10s.		
	Neph, Ozone							

Flight Manager's In-Flight Log

Flight No B...048.... Date ...3.9.04..... Page ...3... of ...3...

Video Tapes
V8
No.
Ends
FFC / RFC / DFC / UFC

	GPS	INU
Lat		
Long		
Time		
Status		

DRS	☐
HORACE	☐
SATCOM	☐

GMT	EVM	Height	QNH	Hdg	TAT	DP	DI Htr	Wind/ Sea st.
								ETA 1855Z
		Transit	return	at	FL260			
					45			
164010	RAND	~~AT~~ TREVISO		3h	~~40~~			
					Cameras ALL misted			
					up on descend			
			GPS Pan	Posn				
			45°	39.18	N			
			012'	12.13	E			
		Landed	with	4tonnes	fuel	(1hr early)		

JH
~~ATR~~
SRO
SWH
~~KJD~~
MD
SCD

Flight Manager's Instrument Status Log

Flight No. **B**...048..... Date ...3.9.04.....

Instrument	Fitted	Operated	Instrument	Fitted	Operated
Navigation			**Cloud Physics**		
INU			**Probes**		
GPS		✓	FFSSP		✓
Satcom C		✓	PCASP		✓
Satcom H		✓	2D-P		
Thermometers			2D-C	X	
De-Iced Temp			Cloudscope	✓	
Non De-Iced		✓	SID 1		✓
Heimann		✓	SID 2	X	
Hygrometers			CPI		
G. Eastern			HVPS	X	
J. Williams		✓	**Racks:**		
Nevzorov	X		INC	X	
TWC	X		CCN / CNC only	X	✓
FWVS			CVI		✓
Radiometers					
Upper Clear			**Aerosol**		
" Red		✓	PSAP		✓
" Silicon		X	Nephelometer		✓
" JO1D			AMS		✓
Lower Clear					
" Red		✓			
" Silicon					
" JO1D	✓	X			
Large Radiometers					
TAFTS	X				
MARSS	X				
DEIMOS	X				
ARIES					
~~SWS~~ / SHIM	✓	✓			
Chemistry					
Ozone	✓				
ECGC	X				
NOX	✓				
CO	✓		**Others:**		
ORAC	X				
PAN	X				
PERCA	X				
WAS	✓				

Terra 0834

ATSR 0845

AQUA, 1016

Flight Manager's Faults / Incidents Log

Flight No. B048

Instruments

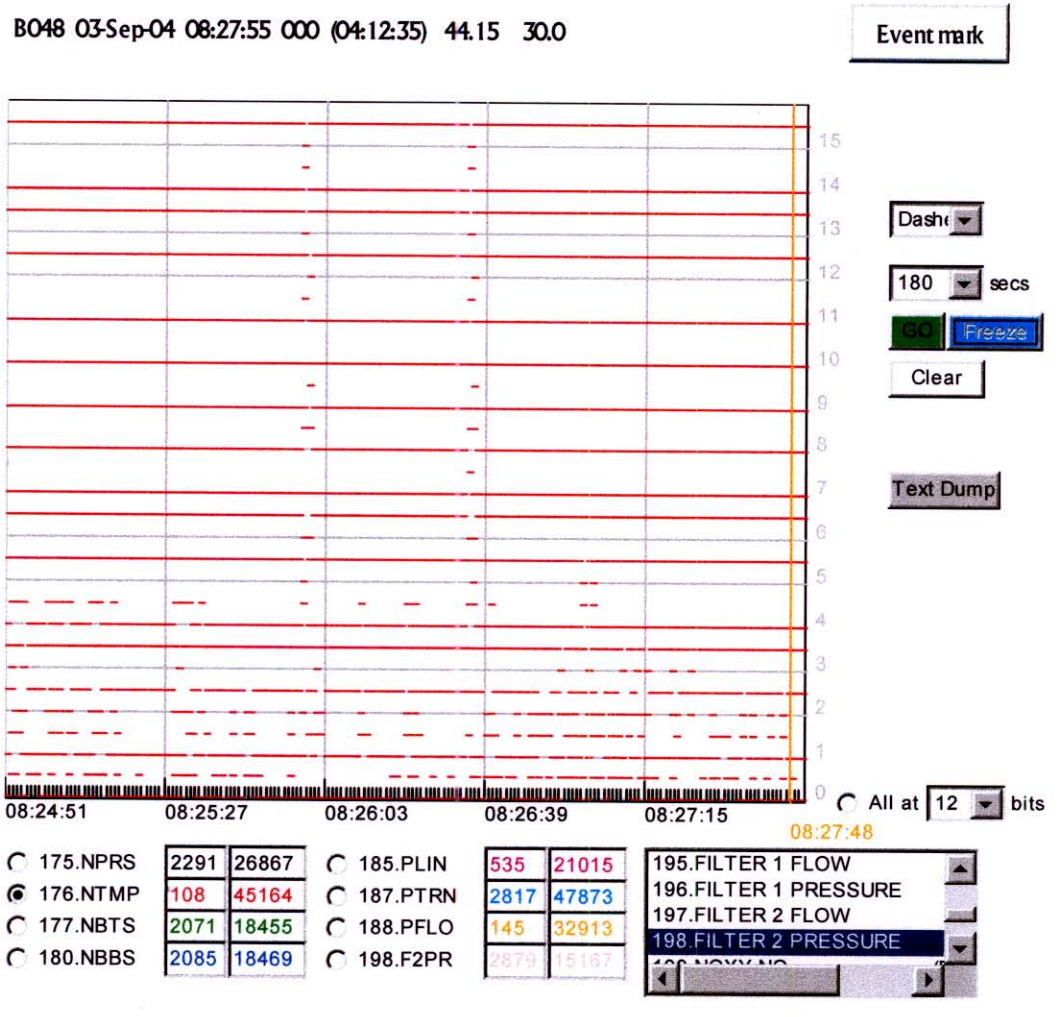
1. Aerack DLU - On DRS plot, Ch 177 NBTS show Bit 10 is always zero. This is also the case for Ch 180 NBBS (which is on a separate DLU card). ~~(bit 15 low on Neph channels too...)~~.

2. Horace plotting flt summ problem again at 0839. Came back for a while then problems again after selecting Trk Plot. Later problems went away when SWS closed 3 windows. Seems fairly random though as to what cures the problem.

3. Neph - data logged on FAAM1 laptop (as well as DLU).

Aircraft

• Rations:


B048 03-Sep-04 08:27:55 000 (04:12:35) 44.15 30.0
Event mark
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Dash
180
secs
GO
Freeze
Clear
Text Dump
All at
12
bits
08:24:51
08:25:27
08:26:03
08:26:39
08:27:15
08:27:48
175.NPRS
176.NTMP
177.NBTS
180.NBBS
2291
26867
108
45164
2071
18455
2085
18469
185.PLIN
187.PTRN
188.PFLO
198.F2PR
535
21015
2817
47873
145
32913
195.FILTER 1 FLOW
196.FILTER 1 PRESSURE
197.FILTER 2 FLOW
198.FILTER 2 PRESSURE